

Unlocking the Potential of ChatGPT: A Comprehensive Exploration of its Applications, Advantages, Limitations, and Future Directions in Natural Language Processing

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Abstract

Large language models, pivotal in artificial intelligence, find diverse applications. ChatGPT (Chat Generative Pre-trained Transformer), an OpenAI creation, stands out as a widely adopted, powerful tool. It excels in chatbots, content generation, language translation, recommendations, and medical applications, due to its ability to generate human-like responses, comprehend natural language, and adapt contextually. Its versatility and accuracy make it a potent force in natural language processing (NLP). Despite successes, ChatGPT has limitations, including biased responses and potential reinforcement of harmful language patterns. This article offers a comprehensive overview of ChatGPT, detailing its applications, advantages, and limitations. It also describes the main advancements from GPT-3 to GPT-4 Omni, comparing them with other LLMs like LLaMA 3, Gemini and Deepseek. The paper underscores the ethical imperative when utilizing this robust tool in practical settings. Furthermore, it contributes to ongoing discussions on artificial intelligence's impact on vision and NLP domains, providing insights into prompt engineering techniques.